CONFIGURATION MANAGEMENT (CM) PLAN FOR THE UNMANNED AERIAL VEHICLES (UAV) TACTICAL CONTROL SYSTEM (TCS)

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Draft

Prepared for:
Joint Program Executive Office
Cruise Missiles and UAVs

Prepared by:
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Approval:

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CHANGE RECORD

THIS SHEET IS A RECORD OF EACH ISSUE OF THIS DOCUMENT. WHEN THE REVISED DOCUMENT IS ISSUED, THE PREVIOUS ISSUE IS AUTOMATICALLY SUPERSEDED.

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TITLE	DOCUMENT NUMBER
Configuration Management (CM) Plan For the Unmanned Aerial Vehicles (UAV) Tactical Control System (TCS)	TCS 701

Approval:

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1. Introduction

This Configuration Management Plan (CMP) establishes the requirements for CM as applied to the UAV TCS Program. This CMP applies to all Configuration Items (CIs) of the UAV TCS program, i.e., hardware, software, and documentation. Appendix E contains a list of acronyms used in this document.

Configuration Management (CM) maintains product control and integrity throughout the project life cycle. This involves identifying the configuration of the documentation, software, and hardware at any given point in time, systematically controlling changes to the configuration, and maintaining the integrity and traceability of the configuration throughout the life cycle.

The Tactical Control System (TCS) is an Office of Secretary of Defense (OSD) initiative to provide joint warfighting commanders with interoperable and scaleable command, control, communications, and data dissemination systems of the family of present and future Medium Altitude Endurance (MAE) and tactical UAVs. TCS will receive and disseminate data for the High Altitude Endurance Test (HAE) UAVs. The Defense Airborne Reconnaissance Office (DARO) and Joint Project Office (JPO) are developing TCS with open specifications for interfaces, services, and supporting formats, consistent with the Open System Deployment Plan (OSDP). TCS will employ current common hardware and software. The TCS architecture will be open and modular to support UAV operations from a variety of computer systems. TCS will allow the simultaneous control of multiple UAVs and their payloads from the same control system. The TCS open system architecture is necessary to support TCS reconfigurability for UAV missions to the joint services at multiple echelons.

TCS has been designated an acquisition category (ACAT) II program and is currently in Acquisition Phase I. The program will be accomplished in three phases.

Phase I   Program Definition and Risk Reduction
Phase II   Engineering and Manufacturing Development (includes Low Rate Initial Production (LRIP))
Phase III   Production, Deployment and Operational Support

The schedule for these phases is addressed in Section 5.

2. Applicability to Other Plans

This CM Plan has been tailored per MIL-STD-973 to meet the requirements of the UAV TCS program. This plan has also been tailored to meet all the CM policies as stated in the NAVAIR Instruction 4130.1C. This plan supersedes any previous CM plans used for the TCS program.

3. CM Plan Review & Update Schedule

This plan will be reviewed yearly. All changes to this plan will be approved by the UAV TCS CCB. The TCS CM Manager has the responsibility to maintain a current CM Plan.

4. Organizational Roles & Responsibilities

4.1. UAV TCS Roles & Responsibilities

The major UAV TCS project support organizations and primary roles and responsibilities are listed below:

DARO - The DARO is providing funding and oversight to the TCS program at the Office of Secretary of Defense (OSD) level.

Program Executive Officer, Cruise Missiles Project and Joint Unmanned Aerial Vehicles Project (PEO(CU)) Tactical Control System (TCS) The PEO(CU) has been designated by DARO as the executing agent for the TCS Program and will provide program management for TCS. The Milestone Decision Authority for the program will be determined by Under Secretary of Defense (Acquisition and Technology) (USD (A&T)). The Program Manager (PM) is responsible for:

- Planning, coordination, and direction of all development community activities related to the program through all phases, including the training at all levels associated with Joint Concept of Operations (CONOPS), field operations and maintenance to include programmatic and technical support to USACOM

TCS Program Office The TCS Program Office is responsible for the following activities within the TCS program:

- Acquisition and programmatic management
- System engineering management
- Test and Evaluation management
- Configuration Management
- Software management
- Logistic management
- Overarching Integrated Product Team management
- Datalink integration activities

Government Laboratories The government laboratories are made up of Naval Surface Warfare Center-Dahlgren Division (NSWCDD), Joint Technology Center/System Integration Laboratory (JTC/SIL), and Naval Air Warfare Center (NAWC) - These laboratories are responsible for the following activities within the TCS Program:

- Acquisition and programmatic support to Joint Project Office (JPO)
- Requirements analysis and software development process
- System and software engineering
- TCS architecture development
- TCS software development, upgrades, and integration
- System integration
- Service integration

- C^4I interoperability planning and execution of tests and demonstrations
- Simulation engineering
- Planning and execution of tests and demonstrations
- Planning and execution of TCS Advanced Warfighting Experiment (AWE)
- Programmatic and technical support to USACOM

Alliant TechSystems - Alliant TechSystems is under sole-source contract to the JPO to provide Outrider support to TCS development and demonstrations. Support to TCS development will focus on:

- Development of Outrider Air Vehicle Real-Time Processor (AV RTP) interfaces to the TCS Core, Launch and Recovery requirements definition, integration of Outrider-specific hardware with TCS, and Outrider software development to support the Outrider-TCS interface
- Demonstration support will include support to TCS System Testing and Simulation, integration, installation, and flight demonstrations using the Outrider UAV

General Atomics (GA) - General Atomics is under sole-source contract to the JPO to provide Predator support to TCS development and demonstrations. Support to TCS development will focus on:

- Development of the Predator software and hardware elements to interface with the TCS Core software and hardware
- Demonstration support will include support to TCS System Testing and Simulation, integration, installation, and flight demonstrations using the Predator UAV
- Providing systems to support TCS development at NSWCDD and JTC/SIL

C^4I Program Offices and Contractors - The TCS organization will maintain a relationship with the C^4I Program Offices and their support contractors in order to achieve the following:

- Support development of C^4I interface requirements
- Support integration of TCS and C^4I systems
- Support test and demonstration

Other Contractors - Throughout the life cycle of the program other contractors and subcontractors may be required as the program transitions from phase to phase.

4.2. CM Roles and Responsibilities

The TCS CM responsibilities have been delegated to the CM IPT. The CM IPT is lead by a designated Program Office Coordinator at the JPO. NSWCDD has been designated as co-lead to this IPT. The CM IPT is responsible for execution of the CM tasks for the UAV TCS program.

The CM IPT charter states the CM IPT shall

- Establish, document and implement the CM program for the TCS hardware, software and documentation products throughout the life-cycle of the project.

- Document the configurations for demos and AWES.

- Implement quality assurance checkpoints throughout the life-cycle of the project.

- Manage the allocated CM budget and resources.

- Report to the System Engineering IPT with status and issues.

Membership on the CM IPT shall represent all aspects of CM for the program (System CM, Hardware CM, Software CM, Library, Documentation CM, Quality Assurance).

The CM IPT shall meet on an as-need basis.

5. Program Schedule and Phases

The TCS effort will be a continuous activity, managed in three separate and sequential phases as outlined in Figure 5-1.

Figure 5-1. Program Schedule and Phases

Activity Name	96 4th	FY 1997 (1st 2nd 3rd 4th)	FY 1998 (1st 2nd 3rd 4th)	FY 1999 (1st 2nd 3rd 4th)	FY 2000 (1st 2nd 3rd 4th)	FY 2001 (1st 2nd 3rd 4th)	FY 2002 (1st 2nd 3rd 4th)	03 1st
Phase I Program Definition and Risk Reduction 3 Fieldable prototypes GA and ATK contract awards System documentation C4I integration and data distribution Exercise participation (Task Force XXI, JWID 97, etc.)		△——————▽		◇ IQC				
Phase II Engineering and Maufacturing Development (includes Low Rate Initial Production (LRIP)) System integrator contract award 6 LRIP systems Complete DT/OT				△————▽				
Phase III Production, Deployment and Operational Support 206 systems delivered USA 62 USMC 17 USN 101 USAF 12 Training 14					△═══◇══════════ FOC			

	1996 3rd 4th	CY 1997 (1st 2nd 3rd 4th)	CY 1998 (1st 2nd 3rd 4th)	CY 1999 (1st 2nd 3rd 4th)	CY 2000 (1st 2nd 3rd 4th)	CY 2001 (1st 2nd 3rd 4th)	CY 2002 (1st 2nd 3rd 4th)

During Phase I, the CM program will be defined and implemented. Key CM milestones during Phase I are:

- CM Plan revision is documented and signed by the JPO TCS Program Manager
- The TCS Block Upgrade plan is defined and documented
- A CM Manager at the JPO has been designated
- A CM co-lead has been designated
- CM activities are planned
- Work products are identified, controlled and available
- Changes to work products are controlled
- Affected groups and individuals are informed of the status and contents of system baselines

6. Configuration Management Requirements

The following sections describe the CM requirements for the configuration identification, configuration control, configuration status accounting, release management, master library and audits.

6.1. Configuration Identification Requirements

Configuration identification is the process of defining and documenting the configuration of a system at designated life-cycle points referred to as baselines. As development progresses and additional items are produced, identification becomes more detailed. The UAV TCS CM program shall identify the products that establish the Functional, Allocated, and Product Baseline configurations as defined in sections 6.1.1 - 6.1.1.3. Appendix A details the configuration items (CIs) identified for the functional, allocated and product baselines within the UAV TCS program.

Configuration Identification also consists of defining the nomenclature that shall be used to uniquely identify the System, Hardware, Software and Documentation CIs. Section 6.1.2 details the identification scheme.

6.1.1. Configuration Baselines

An authorized baseline is established when the appropriate CIs are reviewed, approved and placed under control. This becomes the basis for all change control and status accounting for that CI. The system development cycle is comprised of Functional, Allocated, and Product baselines.

The suggested composition of each baseline is defined in MIL-STD-490. The CM responsibility is to control and distribute the approved versions of all system CIs identified for each baseline. Appendix A identifies the CIs comprising the baselines.

6.1.1.1. Functional Baseline

Establishment of the functional baseline marks the end of the conceptual or program initiation phase of the development. In its final form the functional baseline is embodied in documents such as the System or Segment Specifications and design specifications which specify all essential system functional characteristics, necessary interface characteristics, specific designation of the functional characteristics of key configuration items, and all of the tests required to demonstrate achievement of each specified functional characteristic. The CIs identified as the functional baseline for UAV TCS program are listed in Appendix A.

6.1.1.2. Allocated Baseline

This baseline consists of specifications defining the requirements for each major configuration item. These may be supplemented by other types of specifications, engineering drawings and related data, as necessary, to specify all of the essential

configuration item characteristics including delineation of interfaces, physical characteristics necessary to assure compatibility with associated systems, configuration items, inventory items, and all of the tests required to demonstrate achievement of each specified allocated characteristic. The CIs identified as the allocated baseline for UAV TCS programs are listed in Appendix A.

6.1.1.3. Product Baseline

This baseline normally includes product specifications, engineering drawings and related data, as necessary, to provide a set of documents adequate for the procurement, production, test, evaluation and acceptance of a configuration item. This baseline provides technical descriptions of the required physical characteristics of a configuration item, the functional characteristics designated for production acceptance testing, and required acceptance tests. This baseline also consists of the final, released version of the software which includes all applicable code and documentation as well as vendor-supplied code and documentation for COTS, GOTS, and NDI software. The CIs identified as the Product Baseline for the UAV TCS program are listed in Appendix A.

6.1.2. Configuration Identification

Configuration Identification consists of uniquely identifying the documentation, software, hardware and system CIs. The following sections detail the requirements.

6.1.2.1. System Identification

Phase I will provide three (3) fieldable TCS prototypes to operational units. Phase II will provide 6 Low Rate Initial Production (LRIP) systems; 2 Navy, 1 Marine Corps Outrider, 1 Army Outrider, 1 Air Force Predator, 1 Army TOC. Phase III will provide an additional 200 TCS nodes. The system identification shall change whenever the software, hardware or documentation configuration comprising the system changes.

The following nomenclature shall be used to identify the systems:

    TCS/aa Block x Baseline y Version z, A
    Where aa may be LB, SB, MM
    Where   LB = land based
                   SB = ship based
                   MM = mobile unit

                   others may be added as needed.

Block x indicates the TCS program Block.   It will begin with 0 and increment by 1 whenever upgrades are scheduled. Baseline y indicates the version of the system within that Block. The Baseline will begin at 1 and increment whenever a change is made to a CI within the system. Version z indicates the revision within this baseline. "A" indicates a scaleable configuration of the indicated baseline.

TCS/SB Block 0, Baseline 1, Version 1 will be the Ship based LRIP baseline.

TCS/LB Block 0, Baseline 1, Version 1A will be the Land based LRIP baselines supporting Tactical Operation Centers.

TCS/LB Block 0, Baseline 1, Version 1B will be the Land based LRIP baseline supporting mobile units.

6.1.2.2. Documentation Identification

Documentation identification will be changed anytime the document is changed due to:

1. Editorial corrections
2. Technical corrections
3. Capability improvements
4. New requirements

The following nomenclature shall be used for all TCS documentation:

TCS aaa, Version X.Y

Where:

aaa indicates the type of document
aaa = 1XX, indicates system documentation
aaa = 2XX, indicates interface documentation
aaa = 3XX, indicates software documentation
aaa = 4XX, indicates hardware documentation
aaa = 5XX, indicates data documentation
aaa = 6XX, indicates operational documentation
aaa = 7XX, indicated program documentation

XX will be a unique # assigned by CM.

Version X shall indicate the version of the document. Phase I documents will be 1.Y versions. Y will increment as the documentation versions are changed. Block 1 documentation will be 2.Y versions. X will increment with each block upgrade. Y will increment with each version change within the Block.

Appendix C contains a list of the Documentation CIs currently identified. This list will be updated as new documentation is identified to support the system.

6.1.2.3. Software Identification

The software identification for the TCS program shall change whenever there is a change to the software. The following nomenclature shall be used:

TCS s.b.i.c
Where s = new software baseline
b = update to the software baseline with significant new functionality added

i = update to the software baseline with moderate/minor new functionality

c = update to the software baseline for error corrections

The following shall be used:

For Block 0, the software baseline will be TCS 1.0. The SW version of the LRIP system shall be TCS 2.0.

For Block 1, the SW baseline will begin with TCS 3.0.

For Block 2, the SW baseline will begin with TCS 4.0 and will increment for each future Block.

Incrementing b, i, and c will be decided by the Build Review Board with a recommendation from the Software IPT.

6.1.2.4. Hardware Identification

The following identification shall be used to identify the hardware configurations:

    TCS-XX/CP #.# a
    Where XX   = LB for landbased tactical operational centers
                 = SB for shipbased
                 = MM for landbased mobile
                 others may be added as needed.

XX specifies the type of platform/shelter for which this hardware is intended. This field shall remain a 2 character abbreviation.

    Where CP   =SUN for SUN SPARC
                =HP3 for TAC-3
                =HP4 for TAC-4
                =PC for Personal Computer
                =SGI for Silicon Graphics Computer
                others may be added as needed.

CP indicates the type of hardware platform. This field shall remain a 3 alpha-numeric abbreviation.

Where #.# indicates Block Upgrade. Revision. Each Block upgrade will increment the Block Upgrade #. Revisions are those where the hardware has been changed due to planned baseline enhancements or planned corrections.

Where "a" signifies a scaled configuration and will be documented in the CM records.

TCS-SB/HP4 2.0a will be the LRIP baseline for the ship based hardware configuration.

TCS-LB/SUN 2.0a will be the LRIP baseline for the land based hardware configuration.

TCS-MM/SUN 2.0a will be the LRIP baseline for the land based mobile configurations.

6.2. Configuration Control

The foundation of configuration management is establishment of the baselines. It provides the standard to which subsequent, authorized changes are made. Each change is recorded so the evolution of the system hardware, software and documentation can be identified at anytime. Configuration is tracked and controlled through vehicles such as formal change requests that recommend hardware, software or documentation changes as a result of defects noted or the need for enhancements to a system. CM maintains control of the baselined versions of hardware, software and documentation. When approval has been obtained to change these items, CM makes the items available to the development agency. Configuration control also requires a process to verify the system products received from the developer are the items authorized by the controlling board and are created with the correct version of the controlled item.

CM shall verify the delivery of changes for each authorized change request. CM shall verify that all changes delivered are associated with an authorized change request. If a change is delivered that is associated with a change request that has not been authorized, CM shall notify the SW IPT and System Engineering IPT for resolution.

6.2.1. Change Control

Formal control of changes to a baseline (including incorporation of newer versions of COTS/GOTS/NDI) must be initiated via a change request. CM shall track and provide accountability for all modifications to hardware, software and documentation authorized through the change control process. Requests for change are reviewed by CM Formal Boards which determine the disposition of each request. These boards determine the content of a build and evaluate the results of formal testing to determine suitability for release to the user. The following sections detail the change requests that will be used by the TCS program and the CM Formal Boards that facilitate the change control process.

6.2.1.1. Change Requests

Various forms are available to request changes to hardware, software and documentation. Requests are made through submission of request forms for changes that result from defects in documentation, software or hardware. Recommendations may also be made for enhancements that add new capabilities or requirements to a system. Change requests to be used by the TCS Program are listed below. Details of the change control methods are documented in Appendix C.

6.2.1.1.1. Engineering Change Proposals (ECP)

The ECP is used in cases where an addition, deletion, or modification of requirements is identified in baseline controlled specifications. ECPs shall be designated either Class I or

Class II in accordance with criteria in MIL-STD-973 which also provides guidelines for preparation of the request.

6.2.1.1.2. Request for Deviations/Waivers (RFD/RFW)

If prior to the development of an item, an agency considers it necessary to temporarily depart from a documented baseline requirement, a deviation may be requested. Waivers are requested when developmental items do not conform to approved configuration identification. Items which through error during development do not conform to configuration identification shall not be delivered to the Government unless a waiver is processed and granted in accordance with MIL-STD-973.

6.2.1.1.3. Change Requests

Change requests shall be used to request an enhancement to hardware, software or documentation, or submit a defect report against the software or documentation. Each change request will be submitted to the appropriate CM formal board for disposition. CM shall assure Change Requests and resolutions are tracked. Appendix D contains the Change Request form and procedures for completing and submitting.

6.2.1.1.4. Hardware Trouble Reports (HTRs)

Hardware Trouble Reports (HTRs) shall be used to document defects against the hardware. HTRs will be submitted to the Systems Development IPT for immediate attention. CM shall assure the problem and resolution are coordinated, documented and tracked. Appendix D contains the form and instructions for completing and submitting an HTR.

Requests for hardware enhancements shall be via a change request as stated in section 6.2.1.1.3.

6.2.1.2. Change Control Boards

The process used to assess, coordinate and make technical decisions on configuration changes is accomplished by formal review boards. Each board has required membership with expectations from each. These are detailed in the following sections.

6.2.1.2.1. Configuration Control Board (CCB)

The CCBs shall be held to approve/disapprove build contents, approve/disapprove builds for release, authorize investigations of ECPs, approve/disapprove ECPs, and approve/disapprove RFWs and RFDs.

CCB membership shall include the following:

    Facilitator, CM IPT
    Chairperson, TCS Deputy Program Manager
    Representation from all IPTs

Ad Hoc attendees

Facilitator responsibilities shall include:

a. Distributing agenda
b. Tracking AIs
c. Distributing minutes and results
d. Providing copies of ECPs, RFWs, RFDs
e. Facilitating the CCB meeting
f. Scheduling the CCB

Chairperson responsibilities shall include:

a. Approve/disapprove build contents
b. Approve/disapprove build releases
c. Authorize or defer ECP investigations
d. Approve/disapprove ECPs
e. Approve/disapprove RFWs and RFDs
f. Assign action items

IPT representatives' responsibilities shall include:

a. Presenting proposed build contents
b. Presenting status of builds and recommendation to release
c. Assessment of ECPs, RFWs and/or RFDs
d. Responding to action items
e. Risks and mitigation plans

Ad Hoc attendees shall be invited when additional expertise is needed.

6.2.1.2.2. Product Review Board (PRB)

At the conclusion of test and analysis, the PRB is convened to review the system. As a result of review, recommendation is made to the CCB as to the product's readiness for release. During the PRB review, members responsible for approval of the build/release sign a checklist provided by CM indicating that the product is complete.

Membership of the PRB shall include:

a. Chairperson, CM IPT
b. Representation from all IPTs
c. Ad Hoc attendees

Chairperson responsibilities to the PRB shall include:

a. Facilitating the discussion
b. Providing the agenda
c. Assigning and tracking action items

  d. Scheduling the PRB
  e. Providing minutes/results of PRB
  f. Updating the CSA database as required

IPT representatives' responsibility to the PRB shall include:

  a. Providing summary of build contents
  b. Providing testing results
  c. Identifying risks
  d. Providing release and install plans

Ad Hoc attendees shall be invited when additional expertise is needed.

6.2.1.2.3. Assessment Review Board (ARB)

The ARBs are conducted bi-weekly to investigate and assess each change request and recommend a status and priority for the criticality of the change request.

ARB membership shall include the following:

  a. Chairperson, CM IPT
  b. Secretariat, CM IPT
  c. Representation from all IPTs
  d. Ad Hoc attendees

Secretariat responsibilities to the ARBs shall include:

  a. Notifying board members of the time and place for upcoming sessions and developing an agenda.
  b. Preparing packages for review. These packages are distributed one week before the ARB.
  c. Recording status of change requests as they are assessed and dispositioned.
  d. Updating the Configuration Status Accounting data base to reflect status changes.
  e. Providing minutes of the meeting to attendees and others as deemed necessary. The minutes include action item lists, approved changes, and a list of attendees.
  f. Tracking action items

Chairperson responsibilities to the ARB shall include:

  a. Facilitating the technical discussions
  b. Assigning action items

IPT representatives' responsibilities to the ARB shall include:

  a. Providing assessment of the change requests as they apply to the technical area of the respective IPTs
  b. Recommending priority and disposition of each change request

c. Providing scoping, operator impacts and recommendations, as appropriate

Ad Hoc attendees shall be invited when additional expertise is needed.

6.2.1.2.4. Build Review Board (BRB)

The BRB meets as required and recommends the content of future releases to the CCB. Recommendations are based on technical, fiscal, cost, schedule and programmatic inputs.

BRB membership shall include the following:

a. Chairperson, CM IPT
b. Representation from all IPTs
c. Ad Hoc attendees

Chairperson responsibilities to the BRB shall include:

a. Providing agenda
b. Scheduling the BRBs
c. Facilitating the discussions
d. Assigning and tracking action items
e. Distributing minutes

IPT representatives' responsibilities to the BRB shall include:

a. Identifying CIs to be added, changed or deleted for each build and associated schedule.
b. Identifying test, CM, demo, exercise and other requirements per build.
c. Identifying change requests and ECPs to be included in each build.

Ad Hoc attendees shall be invited when additional expertise is required.

6.3. Configuration Status Accounting

Configuration Status Accounting (CSA) provides traceability of changes to configuration baselines. CM will provide CSA for TCS products. Status accounting involves tracking change requests from submission through resolution and closure. MIL-STD-973 serves as the guideline for CSA.

When a potential hardware, software or documentation defect is reported or an enhancement is recommended, it shall be submitted to the CM Manager. Once received, the CM manager forwards the request to the appropriate CM board for review and assessment. The appropriate board will assess the request and assign the impact (fiscal, operational, schedule, resource) of the implementation of the change.

CM status accounting responsibilities include:

a) Accounting for the TCS functional, allocated and product baselines, and the changes that affect these baselines.

b) Ensuring up-to-date status of all change requests.

c) Assist in producing required reports.

Status accounting shall provide traceability of changes to controlled products, serve as a basis for communicating status and serve as a vehicle for maintaining a cross reference between hardware, software and the associated documentation.

A high level overview of the database to be used for TCS CSA may be found in Appendix D.

6.4. Master Library

Hardware, software and documentation identifying established baselines shall reside in the Master Library. The objective of the library is to provide a centralized repository for official versions of each configuration. The library supports configuration management via the following mechanisms:

a. Maintaining the collection of software, hardware and documentation used to reproduce baselines and upgrades.

b. Tracking the distribution and receipt of hardware, software and documentation.

c. Controlling the integrity and security of all materials in the library.

d. Incorporating change packages into master documentation.

e. Archiving software and documentation.

Items to be baselined shall be submitted to NSWCDD for incorporation in the Master Library, placement on the World Wide Web and distribution, as required.

The JPO, SIL and NSWCDD will maintain a repository of documentation to facilitate exchange of information. Items, other than those to be baselined, may be submitted to the TCS library by providing softcopy or hardcopy to the Library POCs at JPO, the SIL or NSWCDD.

Items may be requested from the TCS library by contacting anyone of the POCs. When items are submitted to the library the POC receiving the items will distribute to the other two POCs. Each POC will distribute to the customers they support.

6.5. Release Management

Release Management is the CM activity which controls the release of hardware, software and documentation.

In support of the release effort, CM is responsible for:

Providing a Version Description Document which includes:

– Titles and control number of documents containing information applicable to the product and change package designators.

– Change requests incorporated in the product since the last release.

– ECPs, RFWs and RFDs affecting the system.

– Operator impacts resulting from changes.

– Individual software configuration item identification and brief description.

– Individual hardware configuration item identification and brief description.

– Compatibility with external systems.

– Open problems against the system.

– Operator impacts as a result of open problems.

CM shall release the software CIs for FQT, System Test, DT/OT and demos. As authorized, CM shall provide release for support to exercises.

6.6. Audits

6.6.1. Purpose

Configuration audits verify that the configuration identification is accurate, complete, and will meet program needs.

6.6.2. Types of Configuration Audits

There are two types of configuration audits: the functional configuration audit (FCA) and the physical configuration audit (PCA). Both audits must be satisfactorily completed by the office of primary responsibility establishing the product baseline.

6.6.2.1. Functional Configuration Audit

Functional configuration audits are conducted on both hardware configuration items and software configuration items to assure that the technical documentation accurately reflects the functional characteristics of each. CM shall participate in the functional configuration audits, as required.

6.6.2.2. Physical Configuration Audit

The physical configuration audit is the formal examination of the as-built item against its design documentation. It normally includes a detailed audit of engineering drawings, specifications, technical data, quality control procedures, and production/acceptance tests. CM shall participate in the physical configuration audits, as required.

6.6.2.3. Additional Audits

When the acquisition phase of an item spans a significant period of time, the accumulation of approved changes may warrant additional audits, or there may be a need to validate the performance of an item and the accuracy of its configuration identification and status accounting system. Requirements for such audits will be determined by the office of primary responsibility and addressed on an as-needed basis.

6.6.3. Audit Results

During the life-cycle, CM may audit the results from technical reviews as listed in Table 6-1.

Table 6-1. Life Cycle Technical Reviews and Configuration Audits

TYPE	PURPOSE	TYPICAL PROGRAM PHASE	RESULTS
System Requirements Review (SRR)	Review System Requirements Definition & Functional Description	Concept Exploration & Definition	Documented Minutes. System Specification & Conceptual Drawings Approved. Functional Baseline.
System Design Review (SDR)	Review Allocation Requirements & Interface Identification	Demonstration/Validation	Documented Minutes Key Subsystems & Critical Items Identified. Development Specification & Developmental Drawings Approved. Interface Development Specifications Approved. Upgrade Functional Configuration Identification. Allocated Baseline.
Production Readiness Review (PRR)	Determine Production Readiness	Engineering & Manufacturing Development (Progressive Reviews & Audits)	Data to Support Production Decision. Upgrade Functional & Allocated Configuration Identification. Establish Product Baseline.
Preliminary Design Review (PDR)	Review Selected Design	Engineering & Manufacturing Development (Prior to Start of Detailed Design)	Documented Minutes/Action Items. Design Approach for ALL Approved Items. Interface Control Documents Coordinated.
Critical Design Review (CDR)	Ensure Detailed Design Satisfies Development Specifications	Engineering & Manufacturing Development (Prior to Design Release)	Documented Minutes/Action Items. Incrementally & Conditionally Approved Preliminary Product Baseline Including Product, Process & Material Specifications. Product Drawings Approved. Baseline Test Specimens.
Test Readiness Review (TRR)	Determine Readiness For Integrated Testing	Engineering & Manufacturing Development (Late)	Documented Minutes/Action Items. Integration Proven. Ready for Higher Level Testing.
Functional Configuration Audit (FCA)	Determine Performance Meets Development Specification	Engineering & Manufacturing Development (Incrementally) (After Government Test & Evaluation)	Documented Minutes/Action Items. Technical Concurrence That System Design & Tests Meet Contract Requirements.
Physical Configuration Audit (PCA)	Ensure Item is Built to Latest Configuration Identification Documentation	Engineering & Manufacturing Development (Incrementally) (Prior to Government Test & Evaluation)	Documented Minutes/Actions Items. Verified Configuration Identification.
Formal Qualification Review (FQR)	Determine Qualification Test Results Meet Contract Requirements	Engineering & Manufacturing Development or Initial or Follow on Production	Qualification Certification. Contract Requirements Demonstrated By Tests. Reverify Baseline.

A. List of CIs per Baseline

A.1. Functional Baseline

TCS ORD

TCS Concept of Operations (CONOPS)

TCS System/Subsystem Specification (SSS)

TCS System/Subsystem Design Document (SSDD)

Test and Evaluation Master Plan (TEMP)

TCS System Test Plan

A.2 Allocated Baseline

TCS Software Requirements Specification (SRS)

TCS Software Detailed Design Specification (SDD)

TCS Antenna Systems Specification

TCS Hardware Performance Specification (HWPS)

TCS Hardware Design Document

TCS Data Link Specification

TCS Reliability (R), Maintainability (M), and Availability (A) Specification

TCS R, M and A Based Design

TCS to CCTV IDD

TCS to AFATDS IDD

TCS to ASAS IDD

TCS to JSTARS AI CGS IDD

TCS to JMCIS IDD

TCS to ETRAC IDD

TCS to JSIPS-N IDD

TCS to HAE IDD

TCS to NWCS-P IDD

TCS to IAS IDD

TCS to JDISS IDD

TCS to TS II IDD

TCS to TEG IDD

TCS to ATWCS IDD

TCS to ACS IPF

TCS to JSIPS-AF IDD

TCS to AVSS IDD

TCS to ATHS IDD

TCS to TBMCS IDD

TCS to IPL IDD

TCS to CIP IDD

TCS to TCIM IDD

TCS to DDE IDD

TCS to SBPCS IDD

TCS to TES IDD

TCS to Data Server IDD

TCS to Data Control Module IDD

TCS to SAR IDD

TCS Core to MP IDD

TCS to AV Specific GDT

TCS to NAV Data IDD

TCS to COMPASS IDD

TCS to AV STD IDD

TCS to Antenna Control LOS Specification

TCS to Antenna Control Ku Specification

TCS to L&R IDD

TCS to MIES IDD

TCS to CARS IDD

TCS to AFMSS IDD

TCS to TAMPS IDD

TCS to AMPS IDD

C^4I JII

TCS Training Requirements Specification

Human Computer Interface Specification

TCS FQT Plan

ILS Requirements Specification

Safety Requirements Specification

Security Requirements Specification

Readiness Requirements Specification

Operational Task Analysis Report

A.3 Product Baseline

The following Configuration Items shall comprise the Product Baseline for TCS.

TCS Software Versions (COTS, GOTS, NDI, development)

TCS Hardware Versions

    3 fieldable prototypes

        1 ship based

        1 land based - shelter

        1 land based - TBD

    6 LRIP Systems

3 ship based

3 land based

206 Production Systems

TCS Documentation

TCS System VDD

TCS System Operator's Manual

TCS Product Specification

TCS Software User's Manual

B. Documentation Identification List

B.1   System Documents

TCS 100 - CONOPS

TCS 101 - TEMP

TCS 102 - TCS SSS

TCS 103 - TCS SRS

TCS 104 - TCS SSDD

TCS 105 - Antenna Systems Specification

TCS 106 - TCS HWPS

TCS 107 - TCS HWDD

TCS 108 - TCS HCI Specification

TCS 109 - TCS DL Specification

TCS 110 - TCS Security Requirements Document

TCS 111 - TCS Operational Task Analysis Report

TCS 112 - TCS Training Requirements Document

TCS 113 - TCS ILS Requirements Document

TCS 114 - TCS Safety Requirements Document

TCS 115 - TCS R, M & A Specification

TCS 116 - TCS R, M & A Based Design

TCS 117 - SDD

TCS 118 - TCS System Test Plan

TCS 119 - TCS FQT Plan

TCS 120 - Readiness Requirement Specification

JROCM 001-97 - TCS ORD

B.2   Interface Documents

TCS 200 - TCS to AFATDS Interface Design Document (IDD)

TCS 201 - TCS to ASAS IDD

TCS 202 - TCS to ADOCS IDD

TCS 203 - TCS to ATWCS IDD

TCS 204 - TCS to NWCS-P IDD

TCS 205 - TCS to CCTV IDD

TCS 206 - TCS to IAS IDD

TCS 207 - TCS to TEG IDD

TCS 208 - TCS to ATHS IDD

TCS 209 - TCS to JSTARS AI CGS IDD

TCS 210 - TCS to JSIPS-N IDD

TCS 211 - TS to JSIPS-AF IDD

TCS 212 - TCS to JDISS IDD

TCS 213 - TCS to Trojan Spirit II IDD

TCS 214 - TCS to JMCIS IDD

TCS 215 - TCS to ACF IPF IDD

TCS 216 - TCS to MIES IDD

TCS 217 - TCS to CARS IDD

TCS 218 - TCS to ETRAC IDD

TCS 219 - TCS to TAMPS IDD

TCS 220 - TCS to AFMSS IDD

TCS 221 - TCS to TBMCS IDD

TCS 222 - TCS to Compass IDD

TCS 223 - TCS to IPL IDD

TCS 224 - TCS to CIP IDD

TCS 225 - TCS to TCIM IDD

TCS 226 - TCS to DDE IDD

TCS 227 - TCS to AVSS IDD

TCS 228 - TCS to SPBCS IDD

TCS 229 - TCS to AV STD IDD

TCS 230 - TCS to Antenna Control LOS ID

TCS 231 - TCS to Antenna Control KU IDD

TCS 232 - TCS to L&R IDD

TCS 233 - C^4I JII

TCS 234 - TCS to HAE

TCS 235 - TCS to C^4I Systems Interface Description

TCS 236 - TCS to AMPS IDD

TCS 237 - TCS to TES IDD

TCS 238 - TCS to Data Server IDD

TCS 239 - TCS to Data Control Module IDD

TCS 240 - TCS to SAR IDD

TCS 241 - TCS Core to MP IDD

TCS 242 - TCS to AV Specific GDT

TCS 243 - TCS to NAV Data IDD

B.3   Software Documentation

TCS 300 - TCS Software User's Manual

B.4   Hardware Documentation

To be added, as required.

B.5   Data Documentation

To be added, as required

B.6   User Documentation

TCS 600 - JWID Basic Operating Procedures & Installation Drawings

TCS 601 – TCS System Operator's Manual

B.7   Program Documents

TCS 700 - TCS Program Management Plan

TCS 701 - UAV TCS CM Plan

C. Change Control Methods

C.1.0 INTRODUCTION

C.1.1 PURPOSE

This appendix deliniates the procedures and methods to be used to document, assess and manage the configuration changes to the TCS system.

C.1.2 OBJECTIVES

These procedures and methods are designed to support the configuration change control process during development and life-cycle support for the software, hardware, and documentation products.

C.1.3 SCOPE

These procedures and methods will be used to document the configuration change requests for the TCS program. These methods will support the configuration management change control process.

C.2.0 CONFIGURATION CHANGE CONTROL PROCEDURES AND METHODS

C.2.1 CONFIGURATION CONTROL

The UAV TCS Configuration Management (CM) Manager is responsible for the configuration control of the UAV TCS System. Configuration Control is defined as ensuring that proposed changes to configuration items are fully coordinated, documented, assessed and implemented, if approved.

The UAV TCS Program will use Engineering Change Proposals (ECPs), Requests for Waivers (RFWs), Requests for Deviations (RFDs), Change Requests (CRs) and Hardware Trouble Reports (HTRs) to document change requests. Each of these items is discussed in detail in the subsequent sections.

C.2.2 CHANGE CONTROL PROCEDURES AND METHODS

The following sections detail the procedures and methods to be used to prepare and submit change requests to the TCS system.

C.2.2.1 ENGINEERING CHANGE PROPOSALS (ECPs)

ECPs are used to add, delete or modify requirements that are identified in baselined specifications.

ECPs shall be submitted to the TCS CM Manager for forwarding to the appropriate CM Board. The CM Board will either authorize further investigation or defer the investigation. The CM Manager is responsible for informing the originator of the actions taken.

The ECP form to be used is DD form 1692 as specified in MIL-STD-973, Appendix D.

Procedures for completing ECPs may also be found in MIL-STD-973, Appendix D.

ECPs may be submitted to the TCS CM Manager by any of the following methods:

1. FAX.

    fax to: 540-653-8588

        ATTN: Heather Balderson

2.   MAIL TO NSWCDD.

    mailed to NSWCDD at the following address:

        COMMANDER

        Dahlgren Division

        Naval Surface Warfare Center

        ATTN: Penny Pierce, K05

        17320 Dahlgren Road

        Dahlgren, VA 22448-5100

3. HARDCOPY DELIVERY.

    ECPs may be delivered via hardcopy to NSWCDD, Building 194, room 122, Attention Heather Balderson.

4. EMAIL TO NSWCDD.

    ECPs may be emailed to Heather Balderson at hbalder@nswc.navy.mil. or Penny Pierce at ppierce@nswc.navy.mil

The status codes for ECPs are   A = approved by CCB

                               D = disapproved by CCB

                               I = under investigation

                               W = deferred by CCB

ECPs should be assigned a unique number.

C.2.2.2 REQUEST FOR WAIVERS (RFWs)

RFWs shall be used to request approval for non-conformance to a documented baseline requirement.

RFWs shall be submitted to the TCS CM Manager for forwarding to the appropriate CM Board. The CM Board will review the RFW and either authorize further investigation by the IPTs or defer the investigation. The CM Manager is responsible for informing the originator of the actions taken.

The RFW form to be used is DD form 1694 as specified in MIL-STD-973, Appendix E.

Procedures for completing the RFW are also documented in MIL-STD-973, Appendix E.

RFWs may be submitted by:

1. FAX.
    fax to: 540-653-8588
        ATTN: Heather Balderson
2.   MAIL TO NSWCDD.
    Mailed to NSWCDD at the following address:
    COMMANDER
    Dahlgren Division
    Naval Surface Warfare Center
    ATTN: Penny Pierce, K05
    17320 Dahlgren Road
    Dahlgren, VA 22448-5100
3. HARDCOPY DELIVERY.
    RFWs may be delivered via hardcopy to NSWCDD, Building 194, room 122, Attention Heather Balderson.
4. EMAIL TO NSWCDD.
    RFWs may be emailed to Heather Balderson at hbalder@nswc.navy.mil or Penny Pierce at ppierce@nswc.navy.mil.
The status codes for RFWs are   A = approved by CCB
                                        D = disapproved by CCB
                                        I = under investigation

C.2.2.3 REQUEST FOR DEVIATIONS (RFDs)

RFDs shall be used to request a temporary departure from a documented baseline requirement.

RFDs shall be submitted to the TCS CM Manager for forwarding to the appropriate CM Board. The CM Board will review the RFD and either authorize further investigation by the IPTs or defer the investigation. The CM Manager is responsible for informing the originator of the actions taken.

The RFD form to be used is DD form 1694 as specified in MIL-STD-973, Appendix E.

Procedures for completing the RFD are also documented in MIL-STD-973, Appendix E.

RFDs may be submitted by:

1. FAX.

   fax to: 540-653-8588

   ATTN: Heather Balderson

2. MAIL TO NSWCDD.

   Mailed to NSWCDD at the following address:

   COMMANDER

   Dahlgren Division

   Naval Surface Warfare Center

   ATTN: Penny Pierce, K05

   17320 Dahlgren Road

   Dahlgren, VA 22448-5100

3. HARDCOPY DELIVERY.

   RFDs may be delivered via hardcopy to NSWCDD, Building 194, room 122, Attention Heather Balderson.

4. EMAIL TO NSWCDD.

   RFDs may be emailed to Heather Balderson at hbalder@nswc.navy.mil or Penny Pierce at ppierce@nswc.navy.mil.

The status codes for RFDs are   A = approved by CCB

D = disapproved by CCB

I = under investigation

C.2.2.4 CHANGE REQUEST FORM (CRF)

CRFs shall be used to document a defect against the software and/or documentation or request an enhancement to the system, software, hardware or documentation.

CRFs shall be submitted to the TCS CM Manager for forwarding to the appropriate CM Board. The CM Board will review the CRF, assign for investigation and assessment, assign a priority, disposition the CRF and track until closure. The CM Manager is responsible for informing the originator of the actions taken.

The CRF form to be used is depicted in Figure C.2.2.4-1

Procedures for submitting and completing the CRF are in Sections C.2.2.4.1 and C.2.2.4.2 respectively.

The CM Board will disposition the CRF using the status codes for as listed in Section C.2.2.4.3.

The CRF Assessment form to be used is depicted in Figure C.2.2.4-2.

Procedures for submitting the CRF Assessment are the same as for submitting the CRF and is specified in Section C.2.2.4.1.

Procedures for completing the CRF assessment are in Section C.2.2.4.4.

C.2.2.4.1 PROCEDURES FOR SUBMITTING CRFs

There are several ways to submit CRFs for submission to the CM Review Board.

1. TOMAHAWK INFORMATION MANAGEMENT ENGINEERING SYSTEM (TIMES) CRFs may be entered directly into the TIMES database. In order to use this method, Users will need an account, password and access to the TIMES System. Regarding TIMES, Users may request information from NSWCDD, POC Heather Balderson, email:hbalder@nswc.navy.mil, Phone number (540)653-1746.

2. FAXED.
    CRFs may be faxed to: 540-653-8588

                      ATTN: Heather Balderson

3. MAILED TO NSWCDD.
    CRFs may be mailed to NSWCDD at the following address:

          COMMANDER

          Dahlgren Division

          Naval Surface Warfare Center

          ATTN: Penny Pierce, K05

          17320 Dahlgren Road

          Dahlgren, VA 22448-5100

4. HARDCOPY DELIVERY
    CRFs may be delivered via hardcopy to NSWCDD, Building 194, room 122, Attention Heather Balderson.

5. EMAIL TO NSWCDD.
    CRFs may be emailed to Heather Balderson at hbalder@nswc.navy.mil or Penny Pierce at ppierce@nswc.navy.mil

C.2.2.4.2 PROCEDURES FOR COMPLETING CRFs

Explanations of the contents of the individual blocks of the CRF form are listed below. The "*" indicates those items which are mandatory for the originator to provide the appropriate data. For entries with multiple options, the options recommended for use by the TCS UAV program are listed here. TIMES will contain other options that are not applicable to this program.

* 1. Orig Date - The date this problem was discovered or enhancement recommended.

* 2. System Code - Identifies the system to which this CRF is applicable.

      TCS   Tactical Control System

      MUSE   Multi UAV Simulation Environment

3. Fleet Impact - Indicates the user's interest and impact.

H = High, M = Medium, L = Low

This field will be used to consider CRFs for future development.

*4. CRF Number - CRF number. The following shall be used:

- RD - Requirements and Design IPT
- CI - C4I IPT
- SW - Software IPT
- LG - Logistics IPT
- SD - System Development IPT
- DL - Data Link IPT
- TD - Test & Demo IPT
- SE - System Engineering IPT
- CP - Warfighters Planning Group
- CM - Configuration Management IPT
- PM - Program Management IPT
- TG - Training IPT

* 5. Title - A brief phrase or sentence describing the problem or enhancement.

* 6. Version Number - Program version identifier.

If software only - indicate software version;

If documentation - Indicate document number;

If software and documentation - Indicate system version.

7. Document Affected - The official designation of the document against which this CRF is written; include document number, title, revision number, paragraph number, page number. All TCS documents that have been baselined will appear in the selection menu.

8. System Status - Alternate modes or special operations being conducted (EX: Tactical, Testing, Training, etc.).

9. How Detected - Life cycle phase where trouble was detected

General	Specific
COMOPTEVFOR	FORMAL FOT&E TESTING
	FREE PLAY TESTING
CONFIGURATION MANAGEMENT	CM REGENERATION PROCESS
	TEST DATA ANALYSIS
	CM RELEASE MANAGEMENT
PROCESS	FREE PLAY TESTING
	SOFTWARE DESIGN
	DOCUMENTATION REVIEW

CSCI TESTING	BUILD READINESS TESTING
	TEST DATA ANALYSIS
	CAPABILITY TESTING
	FORMAL QUALIFICATION
TESTING	TEST PROCEDURE CHECKOUT
	FREE PLAY TESTING
IN-SERVICE ENGINEERING AGENT	SOFTWARE VERIFICATION TESTING
	FLEET TRAINING
	FLEET USAGE
	FORMAL SBSIT TESTING
	FORMAL FDT&E TESTING
	OSET TEST PROCEDURE
CHECKOUT	FREE PLAY TESTING
	MATERIAL CERTIFICATION
	INSPECTION
	OSET TEST DATA ANALYSIS
	FORMAL OSET TESTING
	FORMAL FOT&E TESTING
	FORMAL COMPATIBILITY TESTING
INTEGRATION LOGISTICS SUPPORT	TECHNICAL MANUAL DEVELOPMENT
	COMMUNITY REVIEW
INTERFACE REQUIREMENTS DEVELOPMENT	COMMUNITY REVIEW
	REQUIREMENTS INSPECTION
	REQUIREMENTS DEVELOPMENT
PROGRAM PERFORMANCE TESTING	FORMAL QUALIFICATION TESTING
	TEST PROCEDURE CHECKOUT
	TEST DATA ANALYSIS
	FREE PLAY TESTING
	TEST INSPECTION
	FORMAL TESTING
	TEST DEVELOPMENT
QUALITY ASSURANCE	REQUIREMENTS ANALYSIS
	CODE ANALYSIS
	TEST DATA ANALYSIS
SITE ACCEPTANCE TEST	SITE ACCEPTANCE TEST
SOFTWARE DEVELOPMENT	TEST DATA ANALYSIS
	SOFTWARE DESIGN
	SOFTWARE INTEGRATION TESTING
	FREE PLAY TESTING

SOFTWARE UNIT TEST
SOFTWARE CODE
SOFTWARE DESIGN INSPECTION
CAPABILITY TESTING
SOFTWARE CODE ANALYSIS
SOFTWARE FUNCTION TESTING
SOFTWARE CODE INSPECTION

SOFTWARE INTEGRATION TESTING

BUILD READINESS TESTING
TEST DATA ANALYSIS
SOFTWARE CODE ANALYSIS
CAPABILITY TESTING
TEST PROCEDURE CHECKOUT
FORMAL QUALIFICATION TESTING
FREE PLAY TESTING

SOFTWARE REQUIREMENTS DEVELOPMENT

REQUIREMENTS DEVELOPMENT
REQUIREMENTS INSPECTION
SOFTWARE PROTOTYPING
COMMUNITY REVIEW

SYSTEM ENGINEERING

REQUIREMENTS DEVELOPMENT
COMMUNITY REVIEW
REQUIREMENTS INSPECTION

SYSTEM INSTALLATION AND CHECKOUT

ACCEPTANCE TESTING
INCO PROCEDURE CHECKOUT

SYSTEM INTEGRATION TESTING

FORMAL QUALIFICATION
TESTING
TEST INSPECTION
FORMAL LBSIT TESTING
ATAT ANALYSIS
TEST DEVELOPMENT
TEST DATA ANALYSIS
FORMAL CERTIFICATION TESTING
BUILD READINESS TESTING
TEST PROCEDURE CHECKOUT
IV&V VERIFICATION
FORMAL INTEROPERABILITY
TESTING
FREE PLAY TESTING
FLIGHT DEMONSTRATION

SYSTEM SAFETY

CODE ANALYSIS
SAFETY TESTING
TEST DEVELOPMENT
TEST INSPECTION

FORMAL TESTING
TEST PROCEDURE CHECKOUT
TEST DATA ANALYSIS
REQUIREMENTS ANALYSIS
DESIGN ANALYSIS

DEMONSTRATION   LAB DEMONSTRATION
                                                  FLIGHT DEMONSTRATION
                                                  EXERCISE

*10. Site - Site where problem was detected.

Name	Full Name
APL	APPLIED PHYSICS LABORATORY
ATK	ALLIANT TECH SYSTEMS
DEMO	DEMONSTRATION SITE
FT HUACHUCA	FT HUACHUCA
FT IRWIN	FT IRWIN
GA	GENERAL ATOMICS
GDE SYSTEMS	GDE SYSTEMS
HUNTSVILLE	HUNTSVILLE
JPO	JOINT PROGRAM OFFICE
NSWCDD	NSWCDD

11. Hardware Suite - The hardware suite that was used when this problem was detected. This field may be used to indicate a development suite or a fielded suite.

Hardware Suite	Description Text
TCS AIR FORCE	TCS AIR FORCE SUITE
TCS ARMY	TCS ARMY SUITE
TCS DEV	TCS DEVELOPMENT SUITE AT NSWCDD
TCS I&T	TCS INTEGRATION & TEST SUITE AT SIL
TCS MARINE	TCS MARINE SUITE
TCS MUSE	TCS MUSE SUITE AT SIL
TCS NAVY	TCS NAVY SUITE
TCS TEST	TCS TEST SUITE AT NSWCDD

12. Test Type - If this problem was discovered during testing, type of test used to discover problem.

13. Test ID - If this problem was discovered during testing, provide test procedure identifier.

14. Test Step - If this problem was discovered during testing, provide test step being executed at the time the trouble was discovered.

15. Can Problem Be Duplicated? - YES or NO. Leave blank if duplication was not attempted.

*16. Originator - Name of the CRF originator (point of contact).

*17. Organization - Organization and code of originator.

Code	Name	Description
---------------	--------------------	--------------------
AERODYNE INC	AERODYNES INC	CONTRACTOR
AIR FORCE	U.S. AIR FORCE	MILITARY
ALLIANT TECH	ALLIANT TECH SYSTEMS	CONTRACTOR
AMERITEC	AMERITEC	CONTRACTOR
APL	APL	CONTRACTOR
ARMY	U.S. ARMY	MILITARY
BATTLESPACE	BATTLESPACE	CONTRACTOR
BDM	BDM	CONTRACTOR
D.P.ASSOCATES	D.P.ASSOCIATES	CONTRACTOR
DRAPER	DRAPER LABORATORY	CONTRACTOR
EG&G	EG&G	CONTRACTOR
ERIM	ERIM	CONTRACTOR
ERR	ERR	CONTRACTOR
GA	GA	CONTRACTOR
GDE	GDE	CONTRACTOR
H J FORD/NSM	H J FORD	CONTRACTOR
IDA	INSTITUE FOR DEFENSE ANALYSIS	CONTRACTOR
ITC	INTERACTIVE TELEVISION CORP.	CONTRACTOR
JPO	JOINT PROGRAM OFFICE	GOVERNMENT
JTC/SIL	JTC/SIL	GOVERNMENT
KPMG	KPMG	CONTRACTOR
MARINES	U.S. MARINE CORPS	MILITARY
MITRE	MITRE	CONTRACTOR
MOTOROLA	MOTOROLA	CONTRACTOR
NAVY	U.S. NAVY	MILITARY
NCCOSC-RDT&E	NCCOSC	GOVERNMENT
NIMA	NIMA	GOVERNMENT
NORTHRUP GRUMMAN	NORTHRUP GRUMMAN	CONTRACTOR
NSWCDD	NSWCDD	GOVERNMENT
SAIC/ALABAMA	SAIC/ALABAMA	CONTRACTOR
SAIC/MCLEAN	SAIC/MCLEAN	CONTRACTOR
SENTEL/JCS	SENTEL/JCS	CONTRACTOR
SYSTEMS DYNAMICS	SYSTEM DYNAMICS	CONTRACTOR
SMT	SYSTEMS MANAGEMENT TECHNOLOGY, INC	CONTRACTOR
SMITH TECH	SMITH TECH	CONTRACTOR
TASC INC	TASC INC	CONTRACTOR
VITRO	VITRO	CONTRACTOR

*18. Telephone - Office phone number (include area code) of originator.

19. Related CRF Number - Identify any related CRFs.

20. Related RFA Number - Identify any related RFAs.

*21. Originator Recommended Priority - Originator recommended priority 1-5.

Priority 1 An error that prevents the accomplishment of an operational or mission-essential function in accordance with official requirements (e.g., causes a program stop) or that interferes with an operator to the extent that the operator prevents the accomplishment of an operational or mission essential function or that jeopardizes personnel safety.

Priority 2 An error that (a) adversely affects the accomplishment of an operational or mission essential function in accordance with official requirements so as to degrade performance and for which no alternative workaround solution exists or (b) that interferes with an operator to the extent that the operator adversely affects the accomplishment of an operational or mission essential function so as to degrade performance and for which no alternative workaround solution exists. (Reloading or restarting the program is not an acceptable workaround solution.)

Priority 3 An error that adversely affects the accomplishment of an operational or mission-essential function in accordance with official requirements so as to degrade performance and for which there is no reasonable alternative workaround solution. (Reloading or restarting the program is not an acceptable workaround solution.)

Priority 4 An error that is an operator inconvenience or annoyance and does not adversely affect a required operational or mission essential function.

Priority 5 All other errors. Enhancements may be given a priority 5.

A CRF is submitted with an originator priority. The review board has the option of keeping the originator priority or changing the priority if the review board agrees a different priority is better suited for the problem.

22. Simulation Used - If program or equipment were used to simulate operational conditions, identify simulation used.

23. Data Extracted - If data was extracted to aid in problem resolution, write in identification of extracted data.

24. Frequency - The frequency at which this problem is seen.

*25. Trouble Description - Brief description of problem that occurred. Also provide details of the events which led to the problem. If enhancement, describe as specifically as possible.

*THESE PARAMETERS MUST BE COMPLETED BY ORIGINATOR.

FIGURE C.2.2.4-1 Change Request Form

1. ORIG DATE	2. SYSTEM CODE	3. FLEET IMPACT H M L	4. STR NUMBER
5. TITLE *			
6. VERSION NUMBER *			
7. DOCUMENT AFFECTED (DOC NO., REV NO., PARA NO., PAGE NO., CHG PKG)			

8. SYSTEM STATUS	9. HOW DETECTED *		
10. SITE *		11. HARDWARE SUITE	
12. TEST TYPE	13. TEST ID		14. TEST STEP
15. PROBLEM DUPLICATED YES NO	16. ORIGINATOR *		
17. ORGANIZATION *	18. TELEPHONE *		
19. RELATED CRF	20. RELATED RFA	21. ORIG PRIORITY * 1 2 3 4 5	22. SIMULATION USED
		24. FREQUENCY (CIRCLE ONE) CONTINUALLY FREQUENTLY 1TIME SELDOM	

C.2.2.4.3 STATUS CODES FOR CRFs

The following status codes will be used by the CM board to track the CRFs.

1X - OPEN, ANALYSIS REQUIRED

 10 - CRF SUBMITTED

 11 - UNDER INVESTIGATION

 12 - SOFTWARE AND DOCUMENTATION PROBLEM, CHANGE PAGES TO BE PROVIDED

 13 - SOFTWARE AND DOCUMENTATION PROBLEM, CHANGE PAGES APPROVED, AWAITING SOFTWARE DELIVERY TO SCM

 14 - SOFTWARE PROBLEM

 15 - DOCUMENTATION PROBLEM, CHANGE PAGES TO BE PROVIDED

 16 - TECHNICAL SOURCE MATERIAL TO BE PROVIDED FOR PROBLEM WORKAROUND

 17 - NEW ENHANCEMENT (PROGRAM UPGRADE HAS BEEN IDENTIFIED)

 18 - REPEATABILITY TO BE VERIFIED

 19 - MORE INFORMATION NEEDED, RETURN TO ORIGINATOR

2X - OPEN, SOLUTION AVAILABLE, FINAL CLOSURE REQUIRED

 20 - SOFTWARE FIXED, NSWCDD AWAITING SOFTWARE DELIVERY

 21 - SOURCE CODE DELIVERED TO SCM BUT REQUIRES INSPECTION, TEST, AND VERIFICATION; CHANGE PAGES HAVE BEEN APPROVED

 22 - SOURCE CODE CORRECTED BUT REQUIRES INSPECTION, TEST, AND VERIFICATION

 23 - DOCUMENTATION PROBLEM, CHANGE PAGES HAVE BEEN APPROVED

 24 - PATCH INSTALLED ON CM MASTER AND VERIFIED, SOURCE CODE AND DOCUMENTATION UPDATE REQUIRED

 25 - PATCH INSTALLED ON CM MASTER AND VERIFIED, SOURCE CODE UPDATE REQUIRED

 26 - SOFTWARE FIXED, PATCH DELIVERED TO NSWCDD, AWAITING VERIFICATION

3X - OPEN, NO ACTION BEING TAKEN

 34 - VALID AGAINST IDENTIFIED VERSION, TECHNICAL SOURCE MATERIAL APPROVED AND RELEASED TO ISEA

 35 - VALID AGAINST IDENTIFIED VERSION BUT DEFERRED

 37 - ENHANCEMENT (WILL BE CONSIDERED IN FUTURE BLOCK UPGRADES)

 38 - VALID AGAINST IDENTIFIED VERSION, TECHNICAL SOURCE MATERIAL HAS BEEN RELEASED TO FLEET BY ISEA

 39 - FORWARDED TO OUTSIDE ACTIVITY, AWAITING RESPONSE

4X/5X - CLOSED

 40 - SOURCE CODE DELIVERED BUT DID NOT CORRECT STR PROBLEM(s), OBJECT CODE INSTALLED ONTO CM MASTER, REJECTED, NEW STR WRITTEN FOR EXISTING PROBLEM(s)

 41 - CORRECTED IN SOURCE CODE, VERIFIED, OBJECT CODE INSTALLED ON CM MASTER, AND DOCUMENTATION UPDATED AND VERIFIED

 42 - CORRECTED IN SOURCE CODE, VERIFIED, AND OBJECT CODE INSTALLED ON CM MASTER

 43 - DOCUMENTATION UPDATED AND VERIFIED

 44 - CORRECTED VIA PATCH, VERIFIED, INSTALLED ON CM MASTER BUT NO SOURCE CODE OR DOCUMENTATION UPDATE REQUIRED

45 - NOT REPEATABLE, REPORTED TO ORIGINATOR

46 - INVALID REPORT OF SOFTWARE TROUBLE, REPORTED TO ORIGINATOR (MUST INCLUDE REASON)

47 - ENHANCEMENT, NOT TO BE CONSIDERED IN THIS OR FUTURE VERSIONS

48 - DUPLICATE CHANGE REQUEST (MUST REFERENCE ANOTHER CHANGE REQUEST REPORT)

49 - SCP, SEP, SCN GENERATED

51 - FOR INFORMATION ONLY

52 - VALID PROBLEM UNIQUE TO TESTING EQUIPMENT OR ENVIRONMENT

53 - WITHDRAWN BY ORIGINATOR

54 - NOT APPLICABLE TO THIS VERSION

55 - VALID AGAINST VERSION IDENTIFIED BUT NEVER WILL BE FIXED IN THIS OR ANY FUTURE VERSION (UNLESS NEW CHANGE REQUEST GENERATED)

56 - VALID AGAINST IDENTIFIED VERSION BUT HAS ALREADY BEEN FIXED IN A LATER VERSION

58 - POSSIBLY VALID AGAINST IDENTIFIED VERSION BUT NOT REPEATABLE IN THIS BUILD

59 - FORWARDED TO OUTSIDE ACTIVITY

FIGURE C.2.2.4-2 CHANGE REQUEST ASSESSMENT FORM

1. DATE *	2. INVESTIGATION COMPLETED BY *	3. TELEPHONE	4. CR NUMBER *

5. TITLE (BRIEFLY DESCRIBE IN 80 CHARACTERS OR LESS)
*

6. COMMENTS
*

7. VERSION INJECTED IN	8. OPERATIONAL FACTOR CLASS 1 2 3 4 5	9. CHANGE DIFFICULTY H M L

10. WORK ESTIMATE HOURS	11. ERROR CATEGORY R I S D C	12. PROBABLITY OF OCCURENCE H M L

13. APPROXIMATE NUMBER OF ROUTINES AFFECTED
____TOTAL   ____HARD   ____MEDIUM   ____EASY

14. SOURCE LINES OF CODE

15. OPERATOR IMPACTS
*

16. RECOMMENDATION
*

C.2.2.4.4 PROCEDURES FOR COMPLETING CRF ASSESSMENTS

* 1. Date - The date this assessment was written.

* 2. Investigation completed by - Name of person who completed investigation.

* 3. Telephone - Office phone number and extension of investigator.

* 4. STR Number - number of change request being investigated.

* 5. Title - Title of change request being investigated.

* 6. Comments - The narrative text that describes the background surrounding the change request.

* 7. Version Injected In - Version in which the problem was first discovered.

  8. Operational Factor - Class 1, 2, 3, 4, 5 (**not currently used for TCS)**

* 9. Change Difficulty - Indicate difficulty of the change.

   H-HARD   M-MEDIUM   E-EASY

*10. Work Estimate Hours - Estimated hours required to fix the problem.

*11. Error Category - The specific value that represents the test error detected in the test plans and procedures, expected results or errors in test execution or analysis.

   R-REQUIREMENTS   I-INTERFACE   S-STANDARDS   D-DESIGN
   C-CODE

  12. Probability of Occurrence -

   High - Likely to occur frequently

   Medium - Could occur sometime

   Low - Unlikely, but possible

*13. Approximate Number of Routines Affected - Number of routines that require changes. '0' if software not affected.

  14. Source Lines of Code - The number of estimated lines of code required to resolve the problem.

*15. Operator Impacts - The narrative text describing the impact or problems the user may experience.

*16. Recommendation - The narrative text describing a recommended solution to the problem.

C.2.2.5 HARDWARE TROUBLE REPORTS (HTRs)

HTRs shall be used to document a hardware defect.

HTRs shall be submitted to System Development IPT Lead and the CM Manager. The HTR will be reviewed, assigned for investigation and assessment, assigned a priority and disposition and tracked until closure. The CM Manager is responsible for informing the originator of the actions taken.

The HTR form to be used is depicted in Figure C.2.1-5.

Each HTR should be assigned a unique number.

Procedures for completing the HTR are in Section C.2.2.5.1.

The status codes for HTRs are listed in Section C.2.2.5.2.

Figure C.2.1-5 Hardware Trouble Report

COMPLETE AT SITE: PART	
1. NAME:	2. PROJECT:
3. MODEL NUMBER:	4. SERIAL NUMBER:
5. MANUFACTURER:	6. PART NUMBER:
7. SYSTEM NUMBER:	8. ASSEMBLY:
COMPLETE AT SITE: FAILURE	
9. SITE OF FAILURE:	10. DATE:
11. FAILURE VERIFIED: YES NO	12: SYMPTOM:
13. DIAGNOSIS:	
14. WAS REMEDIAL ACTION TAKEN: YES NO	
15. ACTION TAKEN:	
16. TECHNICIAN: 17. DATE:	
COMPLETE AT SITE: REPLACEMENT	
18. REPLACEMENT PART AVAILABLE: YES NO	19. SERIAL #:
20. IS SYSTEM NOW OPERATIONAL: YES NO IF NO EXPLAIN:	
COMPLETE BY HARDWARE PERSONNEL: REPAIR	
21. DATE PART SHIPPED FOR REPAIR:	22. DATE RETURNED:
23. VENDOR USED FOR REPAIR:	24. VALUE OF PART: 25. COST OF REPAIR:
26. REPAIR VERIFIED: YES NO	IF NO EXPLAIN:
27. TECHNICIAN:	28. DATE:
29. COMMENTS:	

C.2.2.5.1 PROCEDURES FOR COMPLETEING HTRs

Purpose: This form will give the necessary data to maintain proper levels of maintenance, spared support equipment, product reliability, mean time between failure data, and information needed to properly repair and return defective items to the proper location.

Instructions: Each entry field is numbered and should be completed by the personnel responsible at the failed site. Site personnel should complete fields 1 through 20.

The following is an explanation of each numbered field:

TO BE COMPLETED AT SITE:

1. NAME: Generic nomenclature of failed item, e.g., Hard drive, printer, monitor, etc.
2. PROJECT: Department responsible for failed equipment.
3. MODEL NUMBER: Manufacturer's descriptor, usually identified by tag or plate on equipment.
4. SERIAL NUMBER: Number that identifies individual piece of equipment usually found on back or bottom of equipment. Usually seen in form: S/N:
5. MANUFACTURER: Company responsible for construction and assembly of product.
6. PART NUMBER: Identification of component product by series. This should also include revision levels if available; e.g., P/N: 3934516 REV C; P/N: 8012 A; etc.
7. SYSTEM NAME: Equipment group to which the product is assigned.
8. ASSEMBLY: If part of a larger component, identify the larger component or System Number.
9. SITE OF FAILURE: Ship or land base where equipment failed.
10. DATE: Equipment failure date.
11. FAILURE VERIFIED: Was problem resolved when equipment was replaced?
12. SYMPTOM: What did you see that warranted replacing this part?
13. DIAGNOSIS: What would it take to resolve the problem? Is further action necessary?
14. WAS REMEDIAL ACTION TAKEN: Did someone attempt to resolve the problem?
15. ACTION TAKEN: What was done to resolve the problem? Explain steps taken to resolve this particular failure.
16. TECHNICIAN: Print the name of personnel who performed remedial action.
17. DATE: Date remedial action was taken if available or form completion date.
18. REPLACEMENT PART AVAILABLE: Was there a proper replacement for faulty equipment?
19. SERIAL #: Serial number of replacement part used to repair system.
20. IS SYSTEM NOW OPERATIONAL: Is the system in proper working order? If not please explain what would resolve problem.

TO BE COMPLETED BY HARDWARE PERSONNEL:

21. DATE PART SHIPPED FOR REPAIR: Date part was shipped.

22. DATE RETURNED: Date part was returned.

23. VENDOR USED FOR REPAIR: Name of vendor responsible for repairing faulty part.

24. VALUE OF PART: Replacement cost of damaged or faulty part.

25. COST OF REPAIR: Approximate cost to restore part to working condition. Compare to replacement cost.

26. REPAIR VERIFIED: Was part tested before being returned to stock or service? If not, give reason proper testing was not performed.

TECHNICIAN: Personnel responsible for testing equipment.

COMMENTS: If all information can not be placed onto this form please attach a comment sheet and returned it with this form.

C.2.2.5.2 PROCEDURES FOR SUBMITTING HTRs

HTRs may be submitted by any of the following methods:

1. FAX.

    fax to: 540-653-8588

        ATTN: Mike Henthorne

2. MAIL TO NSWCDD.

    Mailed to the following address:

    COMMANDER

    Dahlgren Division

    Naval Surface Warfare Center

    ATTN: Penny Pierce, K05

    17320 Dahlgren Road

    Dahlgren, VA 22448-5100

3. HARDCOPY DELIVERY.

    Deliver hardcopy to NSWCDD

    Building 194, room 122

    Attention Heather Balderson.

4. EMAIL TO NSWCDD.

    Email to Heather Balderson at hbalder@nswc.navy.mil or Penny Pierce at ppierce@nswc.navy.mil.

C.2.2.5.3 STATUS CODES FOR HTRs

The status code for HTRs is:

    OPEN
    UNDER INVESTIGATION
    DEFERRED

CLOSED

D. CSA DATABASE

The TCS project is utilizing a relational database called TIMES - TCS Information Management Engineering System. The database is hosted on a SUN SPARC 10 Model 31 with 1.8 MB formatted disk space and 2GB RAM. It is connected to the NSWCDD Wide Area Network which is connected to NEWNET, SEACOM-Net, DREN, SURANET and NAVNET. The operating system software is SUN SOLARIS 1 (OS 4.1.3) and the database software is Oracle 7.0 with Forms, Reports and Data Query capabilities.

The following sections may be used as a guide in getting started with TIMES.

D.1.0 Introduction

The following sections explain how users may get started on the TIMES system. Information is provided on:

- Prerequisite Training
- Requesting an Account
- Password Receipt
- Establishing Communications with TIMES
- TIMES Connection and Login/Logout Procedures
- Communications Information
- Additional Account Information

D.2.0 Prerequisite Training

Before being granted an account on TIMES, a new user should have some familiarity with the system. As a minimum, a new user should complete the TIMES Basic System Skills Training provided by NSWCDD.

D.3.0 Requesting an Account

New users of TIMES need to request a TIMES account from NSWCDD.

Authorization to use menu items within TIMES is granted to various privilege categories, called SQL*Menu roles. User requests for role privileges must be made to NSWCDD. Approval for such privileges will be made only by the responsible government managers.

D.4.0 Password Receipt

Upon receiving their password, users should complete the receipt form and return it to NSWCDD/K05. When logging into TIMES for the first time after receipt of a password, users MUST change their password. Users have the option of changing their password at anytime. As a security measure however, users should change their passwords at least every 90 days. Users should execute the *passwd* command to choose a new password.

Users are responsible for the protection of TIMES passwords. Users must maintain the privacy of their passwords by never compromising them in any way. Passwords should be committed to memory and not written down. Any users who compromise passwords are subject to the loss of TIMES privileges.

D.5.0 Establishing Communications With TIMES

There are several ways users can connect to TIMES. To make this connection, users must have either a VT100-compatible terminal or a Personal Computer (PC) with communications software that can emulate a VT100, DEC VT Terminal, X-Terminal, or SUN work station. Figure D-1 illustrates the paths for each of these connection options.

Figure D-1. TIMES Connection Paths
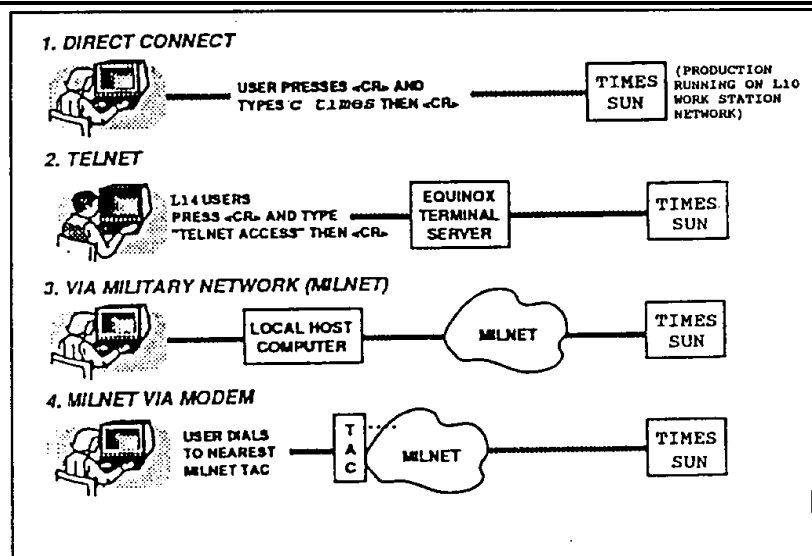
The procedures for connecting to TIMES are different in each of these options and those procedures are defined here.

D.5.1 TIMES Connection and Login/Logout Procedures

To enter TIMES from a direct connect terminal (option 1 Figure D-1), the user presses the <CR> and types *c times* followed by another <CR>. A caution/warning message is displayed followed by a prompt for a login (user name) and then a password. After entering this information, the login (user name) and password are validated by the system, and if correct, entry is permitted into the system. When finished using TIMES, the user should return to the TIMES Main Menu and select the LOGOUT option to exit the system.

NSWCDD users can reach TIMES by using the Telnet method (option 2 in Figure D-1). The user presses the <CR> and types *telnet access* followed by another <CR>. This takes the user directly to the system via an EQUINOX terminal server. The user should then follow the TIMES login/logout procedures as described above.

As shown in options 3 and 4 in Figure D-1, there are other ways that users can connect to TIMES. Step-by-step procedures for these options are presented in Figures D-2 through D-3. The connection procedures are specific to particular modems (Microcom, Racal-Vadic, DataComm) and the ILNET communication network.

MILNET is available either directly from most government computer centers or dial-up via a toll-free number (1-800-368-2217). To dial-up the MILNET, the user calls the nearest Terminal Access Controller (TAC). MILNET TAC numbers are provided in Table D-1. MILNET TACs expect each user to have a personal TAC User ID and Access Code combination (see figures D-2 and D-3).

D.5.2 Communications Information

RESET shown in Figure D-3 refers to resetting the terminal for communication. The baud rate is 1200 bps or 2400 bps for a MILNET connection. Also, select 8 bits, no parity, 1 stop bit in the character format.

The following settings should be made to the terminal or PC software being used to connect to TIMES. The wording for each setup area may differ slightly on the device being used; if in doubt, consult the terminal or software documentation. Standard options are displayed for each of the parameters listed below, with the correct one for the TIMES underlined.

All the parameters listed may not be available as setup options in a user's situation, in which case there is a default to a communication norm.

PARAMETERS	SETTINGS
Duplex	half duplex/<u>full duplex</u>
Transmit speed/baud rate	300/600/<u>1200</u>/<u>2400</u>/4800/9600/19200
Control	<u>on line</u>/local
Language	<u>English</u>/French/Spanish/etc.
Keyboard	<u>North American</u>/International
Scroll	smooth scroll/<u>jump scroll</u>
Mode	VT52/<u>VT100</u>/VT220/ASCII/etc.
Word Size	7 bit/<u>8 bit</u>
Parity check	odd/even/<u>none</u>
Stop bit	<u>1</u>/2
Local echo	on/<u>off</u>
Transmit	limited/<u>unlimited</u>
Auto answer	on/<u>off</u>
Auto wrap	on/<u>off</u>
Line feed	on/<u>off</u>
Flow control	<u>Xoff at 64</u>/Xoff at 128/no Xoff

D.5.3 Additional Account Information

- NSWCDD is the Point of Contact (POC) for all TIMES database and equipment problems. NSWCDD will either resolve users' requests or refer requirements to the appropriate NSWCDD organization for action.

- Inactive accounts (those with no login for 90 days) will be removed from TIMES.

- Users should contact NSWCDD anytime there is a change in their status. These changes may include change of last name, request for removal from TIMES, the addition or deletion of SQL*Menu role privileges, or a change of organizational information (e.g., changes within the user's agency/company or termination of employment with the user's agency/company). Some user information changes may be made directly in TIMES by the user.

Figure D-2. MILNET to TIMES Direct-Connect Procedures

```
The following steps support option 3 of Figure 3-1.

STEP    MILNET

1       <Ctrl/Q>
        Welcome to DDN...

2       @I 126<CR>
        @I 126

3       ~O 128.38.58.20
        TAC Userid:

4       TAC Userid<CR>
        Access Code:

5       Access Code<CR>
        Login OK (Note)
        TCP Trying... Open
        Caution/Warning Message
        Username:
        TIMES Username<CR>
        Password:
        TIMES Password

        Respond to TIMES
        prompts.  Use system as
        required and logout when
        done.

6       LO<CR> (Exit Host)
        HOST CLOSING
        CONNECTION
        CLOSED

7       ~L<CR> (Exit MILNET)
        LOGGED OUT


NOTES:
        1.  If 'Bad Login' is displayed, return to step
            #4.
        2.  Bold italics type means the user must enter
            the required information on the keyboard.
            Names of modifier keys to be pressed are
            enclosed in "< >".
        3.  A slash between two keys means press them in
            conjunction with each other; e.g., <Ctrl/Q>
            means press and hold the Control key, then
            press the Q key.
```

Figure D-3. MILNET to TIMES Via Modem Procedures

The following steps support option 5 of Figure 3-1.

STEP	MICROCOM MODEM	RACAL-VADIC MODEM
1	*RESET*	*RESET*
2	*4*(Until Echoed) 4	(Change Terminal Communications *<CR>* Transmit Speed to 2400)
3	*5*(Once) 45 MNP Class 5 Modem !	*<Ctrl/E><CR>* HELLO:I'M READY *
4	*SB2400<CR>* !SB2400 !	
5	*DT6632162<CR>* P96632162 CONNECT 2400 (Please see Note 1)	*DT6632162<CR>* *DP96632162 DIALING... RINGING... ANSWER TONE... ON LINE 1200 NO ERROR CONTROL (Please see Note 1)
6	*<Ctrl/Q>* WELCOME TO DDN... (Please see Note 2)	*<Ctrl/Q>* WELCOME TO DDN.. (Please see Note 2)
7	*@I 126<CR>*	*@I 126<CR>* @I 126

NOTES:

1. TAC number shown is for Dahlgren, VA. Other users should dial the TAC number nearest their location.
2. If connection is not completed, repeat step #4, but use 1200 instead of 2400.
3. Bold italics type means the user must enter the required information on the keyboard. Names of modifier keys to be pressed are enclosed in "< >".
4. A slash between two keys means press them in conjunction with each other; e.g., *<Ctrl/Q>* means press and hold the Control key, then press the Q key.

Figure D-3. MILNET to TIMES Via Modem Procedures (Cont'd)

STEP	MICROCOM MODEM	RACAL-VADIC MODEM
8	*~O 128.38.58.20* TAC Userid:	*~O 128.38.58.20* TAC Userid:
9	*TAC Userid<CR>* Access Code:	*TAC Userid<CR>* Access Code:
10	*Access Code<CR>* Login OK TCP Trying... Open (Note 1) Caution/Warning Message Username: Respond to TIMES prompts. Use system as required and logout when done.	*Access Code<CR>* Login OK-TCP Trying... Open (Note 1) Caution/Warning Message Username: Respond to TIMES prompts. Use system as required and logout when done.
11	*LO<CR>* (Exit Host) HOST CLOSING CONNECTION	*LO<CR>* (Exit Host) HOST CLOSING CONNECTION
12	*~L<CR>*(Exit MILNET) LOGGED OUT	*~L<CR>*(Exit MILNET) LOGGED OUT
13	*<Ctrl/A>*(Modem Command) *H<CR>*(Hang Up) NO CONNECTION !	*<Ctrl/CD>*(Hang Up) DISCONNECT

NOTES:

1. If 'Bad Login' is displayed, return to step #9.
2. Bold italics type means the user must enter the required information on the keyboard. Names of modifier keys to be pressed are enclosed in "< >".
3. A slash between two keys means press them in conjunction with each other; e.g., *<Ctrl/Q>* means press and hold the Control key, then press the Q key.

Table D-1. MILNET TACs Phone List

SITE	TAC NAME SITE	TAC NOs
OXNARD, CALIFORNIA EL SEGUNDO, CALIFORNIA	HUENEME-MIL-TAC AFSC-SD-TAC EL-SEGUNDO2.MT.DDN.MIL	(213) 643-9204 (213) 643-6883
BATH, MAINE CAMBRIDGE, MASSACHUSETTS HANSCOM AFB	HANSCOM.MT.DDN.MIL HANSCOM2.MT.DDN.MIL	(617) 377-3000 (617) 276-9505
SILVER SPRING, MARYLAND	WHITE-OAK.MT.DDN.MIL	(301) 572-5960
PASCAGOULA, MISSISSIPPI BILOXI, MISSISSIPPI NEW ORLEANS, LOUISIANA	KEESLER.MT.DDN.MIL	(504) 944-8702 (504) 944-7951 (504) 522-2686 (601) 377-3610
MOORESTOWN, NEW JERSEY RED BANK, NEW JERSEY	MONMOUTH.MT.DDN.MIL	(908) 544-3282 (908) 544-2767 (908) 544-4859 (908) 544-2758 (908) 544-2636 (908) 544-2129 (908) 544-2113 (908) 544-4718 (908) 544-2062
ARLINGTON, VIRGINIA DC	PENTAGON2.MT.DDN.MIL	(703) 979-4901
ANDREWS AFB, MARYLAND	ANDREWS.MT.DDN.MIL	(301) 981-0731
RESTON, VIRGINIA	RESTON-DCEC.MT.DDN.MIL	(703) 437-2892 (703) 437-2925 (703) 437-2928 (703) 435-4050
SITE	TAC NAME SITE	TAC NOs
WALLOPS ISLAND, VIRGINIA NORFOLK, VIRGINIA	NORFOLK.MT.DDN.MIL	(804) 423-0346 (804) 423-0241
DAHLGREN, VIRGINIA	DAHLGREN.MT.DDN.MIL	(703) 663-2162
	O/S	(703) 802-4535

E

E. ACRONYM LIST

ACAT - Acquisition Category

ARB - Assessment Review Board

AV - Air Vehicle

AWE - Advanced Warfighting Experiment

BRB - Build Review Board

CCB - Configuration Control Board

CDR - Critical Design Review

CI - Configuration Item

CM - Configuration Management

CMP - Configuration Management Plan

CONOPS - Concept of Operations

COTS - Commercial-Off-The-Shelf

CSA - Configuration Status Accounting

DARO - Defense Airborne Reconnaissance Office

DT/OT - Developmental Tests/Operational Tests

ECP - Engineering Change Proposal

FCA - Functional Configuration Audit

FQR - Formal Qualification Review

FQT - Formal Qualification Tests

GA - General Atomics

GOTS - Government-Off-The-Shelf

IPT - Integrated Product Team

JPO - Joint Program Office

JTC/SIL - Joint Technology Center/System Integration Laboratory

LRIP - Low Rate Initial Production

MAE - Medium Altitude Endurance

MIL - Military

NAWC - Naval Air Warfare Center

NDI - Non-developmental Items

NSWCDD - Naval Surface Warfare Center Dahlgren Division

OSD - Office of Secretary of Defense

OSDP - Open System Deployment Plan

PCA - Physical Configuration Audit

PDR - Preliminary Design Review

PEO(CU) - Program Executive Officer (Cruise Missile and Unmanned Aerial Vehicles)

PM - Program Manager

POC - Point of Contact

PRB - Product Review Board

PRR - Production Readiness Review

RFD - Request for Deviation

RFW - Request for Waiver

RTP - Real-Time Processor

SDR - System Design Review

SRR - System Requirements Review

STD - Standard

SW - Software

TCS - Tactical Control System

TOC - Tactical Operation Centers

TRR - Test Readiness Review

UAV - Unmanned Aerial Vehicles

USACOM - United States Atlantic Command

USD - Under Secretary of Defense